Review of the

IMMT and MQCS

IMMT

- VOSClim observations contain additional elements.
- According to a decision of CBS not to expand the FM13 for these elements, they were restricted to the delayed mode. IMMT-1 had to be modified accordingly.
- The new version, IMMT-2, was adopted by JCOMM-I, Akureyri, 2001.
- Among some other changes IMMT-2 contains 7 new elements (EI 87-93).

LAYOUT FOR THE INTERNATIONAL MARITIME METEOROLOGICAL TAPE (IMMT)
[VERSION IMMT-2] (REVISED; June, 2001)

Element Number	*Character Number*	*Code*	*Element*	*Coding procedure*
			Additional Requirements for the VOSCLIM Project	
87	133-135	HDG	Ship's heading; the direction to which the bow is pointing, referenced to true North.	(000-360); e.g. 360 = North 000 = No Movement 090 = East
88	136-138	COG	Ship's ground course; the direction the vessel actually moves over the fixed earth and referenced to True North	(000-360); e.g. 360 = North 000 = No Movement 090 = East

LAYOUT FOR THE INTERNATIONAL MARITIME METEOROLOGICAL TAPE (IMMT)
[VERSION IMMT-2] (REVISED; June, 2001)

Element Number	*Character Number*	*Code*	*Element*	*Coding procedure*
89	139-140	SOG	Ship's ground speed; the speed the vessel actually moves over the fixed earth.	(00-99); Round to nearest whole knot
90	141-142	SLL	Maximum height in meters of deck cargo above Summer maximum load line.	(00-99); report to nearest whole meter
91	143-145	$s_L$hh	Departure of reference level (Summer maximum load line) from actual sea level. Consider the difference positive when the Summer maximum load line is above the level of the sea and negative if below the water line.	position 143 (sL) sign position;, 0 = positive or zero, 1 = negative positions 144-145 (hh); (00-99) is the difference to the nearest whole meter between the Summer maximum load line and the sea level.

LAYOUT FOR THE INTERNATIONAL MARITIME METEOROLOGICAL TAPE (IMMT)
[VERSION IMMT-2] (REVISED; June, 2001)

Element Number	*Character Number*	*Code*	*Element*	*Coding procedure*
92	146-148	RWD	Relative wind direction in degrees off the bow	Relative wind direction; e.g. 000 = no apparent relative wind speed (calm conditions on deck). Reported direction for relative wind = 001-360 degrees in a clockwise direction off the bow of the ship. When directly on the bow, RWD = 360.
93	149-151	RWS	Relative wind speed reported in units indicated by iw (knots or m/s)	Reported in either whole knots or whole meters per second (e.g. 010 knots or 005 m/s). Units established by iw as indicated in Character Number 27.

Note: Since the relative wind speed can be greater than the true wind speed e.g., iw indicates knots and ff = 98, the relative wind speed may be 101 knots; therefore, three positions must be allocated since iw cannot be adjusted and the relative wind speed converted to meters per second as is done in element 15.

MQCS

- The current Minimum Quality Control Standards (MQCS-IV) do not extend to the additional elements introduced for the VOSClim project.

- In order to also include these VOSClim relevant parameters (El. 87-93 of IMMT-2) in the Minimum Quality Control, VOSClim-IV, London, 2003,considered a proposal by Dr Wagner, GCC Germany, and endorsed the MQCS proposed for these new elements (MQCS-V).

Draft MINIMUM QUALITY CONTROL STANDARDS (MQCS)
(Version MQCS-V, June 2004)

Element	Error	Action
87	HDG ≠ 000-360	correct manually and Q_{22} = 5, otherwise Q_{22} = 4
	HDG = ΔΔΔ, ///	Q_{22} = 9
88	COG ≠ 000-360	correct manually and Q_{23} = 5, otherwise Q_{23} = 4
	COG = ΔΔΔ, ///	Q_{23} = 9
89	SOG ≠ 00 - 99	correct manually and Q_{24} = 5, otherwise Q_{24} = 4
	SOG = ΔΔ, //	Q_{24} = 9
	SOG > 33	correct manually and Q_{24} = 5, otherwise Q_{24} = 3
90	SLL ≠ 00-99	correct manually and Q_{25} = 5, otherwise Q_{25} = 4
	SLL = ΔΔ, //	Q_{25} = 9
	SLL > 32	correct manually and Q_{25} = 5, otherwise Q_{25} = 3
91	sL ≠ 0,1	correct manually and Q_{26} = 5, otherwise Q_{26} = 4
	sL = Δ, /	Q_{26} = 9
	hh ≠ 00 – 99	correct manually and Q_{27} = 5, otherwise Q_{27} = 4
	hh = ΔΔ, //	Q_{27} = 9
	hh >= 13	correct manually and Q_{27} = 5, otherwise Q_{27} = 3
	hh < -01	correct manually and Q_{27} = 5, otherwise Q_{27} = 4

Draft MINIMUM QUALITY CONTROL STANDARDS (MQCS)
(Version MQCS-V, June 2004)

Element	Error	Action
92	RWD ≠ 000 - 360, 999	correct manually and Q_{28} = 5, otherwise Q_{28} = 4
	RWD = ΔΔΔ, ///	Q_{28} = 9
93	RWS ≠ 000 - 999	correct manually and Q_{29} = 5, otherwise Q_{29} = 4
	RWS = ΔΔΔ, ///	Q_{29} = 9
	RWS > 110 kts	correct manually and Q_{29} = 5, otherwise Q_{29} = 3
	RWD versus RWS	
	RWD = 000, RWS ≠ 000	correct manually and Q_{28} or Q_{29} = 5, otherwise Q_{28} = Q_{29} = 2
	RWD ≠ 000, RWS = 000	correct manually and Q_{28} or Q_{29} = 5, otherwise Q_{28} = Q_{29} = 2

Draft MINIMUM QUALITY CONTROL STANDARDS (MQCS)
(Version MQCS-V, June 2004)

Specifications for quality control Indicators Q_1 to Q_{29}

0	No quality control (QC) has been performed on this element
1	QC has been performed; element appears to be correct
2	QC has been performed; element appears to be inconsistent with other elements
3	QC has been performed; element appears to be doubtful
4	QC has been performed; element appears to be erroneous
5	The value has been changed as a result of QC
6	reserved for GCC
7	reserved for GCC
8	Reserve
9	The value of the element is missing

IMMT

- In accordance with the modifications contained in MQCS-V, IMMT has to be adapted.

- The proposed new version, IMMT-3, takes that into account in elements 94 – 101.

Draft LAYOUT FOR THE INTERNATIONAL MARITIME METEOROLOGICAL TAPE (IMMT)
[VERSION IMMT-3] (REVISED; June, 2004)

Element Number	*Character Number*	*Code*	*Element*	*Coding procedure*
94	152	Q_{22}	Quality control indicator for (HDG)	0 - no quality control (QC) has been performed in this element 1 - QC has been performed; element appears to be correct 2 - QC has been performed; element appears to be inconsistent with other elements 3 - QC has been performed; element appears to be doubtful 4 - QC has been performed; element appears to be erroneous 5 - The value has been changed as a result of QC 6 - 8 Reserve 9 - The value of the element missing
95	153	Q_{23}	QC indicator for (COG)	- idem –
96	154	Q_{24}	QC indicator for (SOG)	- idem –

Draft LAYOUT FOR THE INTERNATIONAL MARITIME METEOROLOGICAL TAPE (IMMT)
[VERSION IMMT-3] (REVISED; June, 2004)

Element Number	*Character Number*	*Code*	*Element*	*Coding procedure*
97	155	Q_{25}	QC indicator for (SLL)	- idem –
98	156	Q_{26}	QC indicator for (sL)	- idem –
99	157	Q_{27}	QC indicator for (hh)	- idem –
100	158	Q_{28}	QC indicator for (RWD)	- idem –
101	159	Q_{29}	QC indicator for (RWS)	- idem -

IMMT

Further proposed amendments to IMMT-2 :

- Application of the appropriate code tables for ww, W_1, W_2 for automatic stations (El. 21-23)
- QC indicator (El. 45)
- IMMT version (EL. 65)
- MQCS version (El. 86)

Draft LAYOUT FOR THE INTERNATIONAL MARITIME METEOROLOGICAL TAPE (IMMT)
[VERSION IMMT-3] (REVISED; June, 2004)

Element Number	*Character Number*	*Code*	*Element*	*Coding procedure*
21	42-43	ww	Present weather	WMO code table 4677 or 4680
22	44	W_1	Past weather	WMO code table 4561 or 4531
23	45	W_2	Past weather	WMO code table 4561 or 4531
45	82		Quality control indicator	0 - No quality control (QC) 1 - Manual QC only 2 – Autom. QC only / MQC (no time-sequence checks) 3 - Automated QC only (inc. time sequence checks) 4 - Manual and autom. QC (superficial; no automated time-sequence checks) 5 - Manual and automated QC (superficial; including time-sequence checks) 6 - Manual and automated QC (intensive, including automated time-sequence checks) 7 & 8 - Not used 9 - National system of QC (information to be furnished to WMO)

Draft LAYOUT FOR THE INTERNATIONAL MARITIME METEOROLOGICAL TAPE (IMMT)
[VERSION IMMT-3] (REVISED; June, 2004)

Element Number	*Character Number*	*Code*	*Element*	*Coding procedure*
65	111	IMMT version		0 = IMMT version just prior to version number being included 1 = IMMT-1 (previous version) 2 = IMMT-2 (previous version) 3 = IMMT-3, (this version) 4 = IMMT-4, (next version) etc.
86	132	Q_{21}	Minimum quality (MQCS) control standards version identification	1 = MQCS- I (Original version) 2 = MQCS-II (Version 2, May 1996) 3 = MQCS-III (Version 3, May 2000) 4 = MQCS-IV (Version 4, June 2001) 5 = MQCS-V (Version 5, June 2004) etc.

MQCS

Further proposed amendments to MQCS-IV:

- Extension of El. 14 for VOSClim Q_{29} (RWS)
- Distinction of ww, W_1, W_2 according to their origin, manual or automatic and application of the appropriate QC procedures (El. 21, 22 and 23)
- Update of the MQCS version check (El. 86)

Draft MINIMUM QUALITY CONTROL STANDARDS (MQCS)
(Version MQCS-V, June 2004)

Element	Error	Action
14	$i_W \neq 0, 1, 3, 4$	Correct manually, otherwise $Q_5 = Q_{29} = 4$
21	ww = 22-24, 26, 36-39, 48, 49, 56, 57, 66-79, 83-88	Correct manually and $Q_9 = 5$, otherwise $Q_9 = 4$
	93-94 and latitude <20º	Correct manually and $Q_9 = 5$, otherwise $Q_9 = 3$
	if $i_x = 7$: $w_a w_a$ = 24 - 25, 35, 47 - 48, 54-56, 64-68, 70-78, 85-87 and latitude <20º	Correct manually and $Q_9 = 5$, otherwise $Q_9 = 4$
22, 23	W_1 or W_2 = 7 and latitude <20º	Correct manually and $Q_9 = 5$, otherwise $Q_9 = 4$
	$W_1 < W_2$	Correct manually and $Q_9 = 5$, otherwise $Q_9 = 2$
	$W_1 = W_2$ = ww = Δ Δ Δ Δ	$Q_9 = 9$

Draft MINIMUM QUALITY CONTROL STANDARDS (MQCS)
(Version MQCS-V, June 2004)

Element	Error	Action
86	Minimum Quality Control Standards (MQCS) version identification	1= MQCS-I (Original version) 2= MQCS-II (Version 2, May 1996) 3= MQCS-III (Version 3, May 2000) 4= MQCS-IV (Version 4, June 2001) 5= MQCS-V (Version 5, March 2004) present version

Thank you for your attention